

Ser. No. 10/772,063  
Response to Office Action of 10/25/2005

Attorney Docket: D0932-00447

**REMARKS**

**I. Claim Rejections under 35 U.S.C. § 103**

The Examiner rejects all pending claims 1-10, 12-17, and 38-41 under 35 U.S.C. § 103(a) as being obvious over U.S. published application No. 2004/018524 to Fay *et al.* ("Fay") in view of PCT publication WO 2004/076770 A1 to Toreki, *et al.* ("Toreki"). This rejection is traversed because Fay and Toreki, either taken singly or in combination do not disclose the claimed invention as the examiner contends.

Each of the rejected independent claims 1, 14, 38, 39, 40 and 41 require the provision of the antifungal/antimicrobial agent that is less than 200ppm. The Examiner acknowledges that the Fay reference is silent as to the application of an antifungal/antimicrobial agent in the amount of less than 200 ppm in the cellulosic facing. (Office Action at page 4, ¶ 2.e.). The Examiner then relies on the disclosure of Toreki as teaching a gypsum board having improved antifungal properties, in which polymeric antifungal agent is applied to the paper facing of the gypsum board. (Office Action at page 4, ¶ 2.f.). The examiner then presents a calculation which allegedly shows a biocidal concentration of 114 ppm in the paper facing. However, the examiner's allegation is not correct because examiner's calculation is in error.

Importantly, what the examiner has calculated is the concentration level of sodium persulfate and NOT the concentration of the polymeric antifungal agent, which is the relevant concentration required by the claims. As explained in page 23, lines 19-24 of the Toreki reference, sodium persulfate is a polymerization initiator that may be added to the gypsum board formulation in order to initiate the polymerization of the polymer antifungal agents. In the

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formulation of the antifungal agent solution described on page 26 (Example 11) of the Toreki reference relied on by the examiner, the antifungal agent is the combination of the DADMAC monomer and polyDADMAC. The Toreki reference, on page 4, lines 27-29, states:

The improved antifungal agent of this invention [] is a polymeric antifungal agent, comprising at least two monomeric units, and up to a thousand monomeric units, covalently linked to each other.

The Toreki reference further discloses, on page 11, lines 25-30, that:

For example, in a preferred embodiment, the polymer comprises a polymer comprising at least two and up to one thousand monomeric units of diallyldimethylammonium chloride, (DADMAC), to form poly DADMAC, [2-(methacryloyloxy)ethyl]trimethylammonium chloride (TMMAC), to form poply TMMAC, quaternized vinyl pyridine (VP) derivatives, to give polyVP, or similar polymerizable quaternary amine monomers are utilized to form suitable quaternary amine polymers.

As shown above, the concentration that the examiner has calculated to be 114ppm of the paper weight is that of the initiator agent sodium persulfate and not the antifungal agent.

Applicant presents below the concentration of the antifungal agents (DADMAC monomer and the polyDADMAC) in the coating solution of the Example 11 of Toreki reference on page 26 of the Toreki reference:

The Example 11 of the Toreki reference states that the coating solution was prepared using the following components: (1) 50mL of DADMAC monomer (65 wt % solution), (2) 0.75g of sodium persulfate initiator dissolved in 10mL of water; (3) 10g of 40% polyDADMAC solution in water; and (4) 30mL of water. Assuming that the density of the DADMAC monomer solution is 1.1g/mL, as did the examiner, the following calculations are made:

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(a) Amount of DADMAC monomer in the solution: 50mL of 65 wt% DADMAC solution contains  $(50\text{mL} * 1.1\text{g/mL}) * (0.65) = 35.75\text{g}$ ;

(b) Amount of polyDADMAC in the solution: 40 % of 10g water solution is 4g;

(c) Weight of the DADMAC monomer solution:  $(50\text{mL} * 1.1\text{g/mL}) = 55\text{g}$ ;

(d) Weight of the sodium persulfate solution:  $0.75\text{g} + (10\text{mL} * 1.0\text{g/mL}) = 10.75\text{g}$ ;

(e) Weight of 30mL of distilled water:  $(30\text{mL} * 1.0\text{g/mL}) = 30\text{g}$ ;

(f) Total weight of the solution:  $(55\text{g of DADMAC monomer solution}) + (10.75\text{g of sodium persulfate solution}) + (10\text{g of polyDADMAC solution}) + (30\text{g of distilled water}) = 105.75\text{g}$ ;

(g) Concentration of the antifungal agents in the coating solution which is applied at 1.0 wt. % of the paper facing:  $((35.75\text{g of DADMAC monomer} + 4\text{g of poly DADMAC}) / 105.75\text{g}) * 0.01 = 0.00376$  or 3760 ppm.

As shown above the concentration of the antifungal agent used in the Example 11 of the Toreki reference is distinguishably higher than the "less than 200ppm" level required in claims 1, 14, 38, 39, 40 and 41.

Furthermore, the Example 10 of the Toreki reference (see p. 25 of Toreki) states that "[t]he final concentration of polyDADMAC formed on the thus treated surfaces is about 0.5 to 1.5% of the total mass of the paper." This represents 5,000 to 15,000ppm of the mass of the paper being the antimicrobial agent which is again distinguishably higher than the "less than 200ppm" level required in claims 1, 14, 38, 39, 40 and 41.

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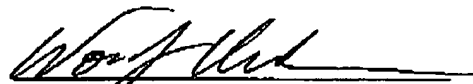
Therefore, the disclosure of the Toreki reference does not cure the deficiency of the Fay reference and the cited references either taken singly or in combination do not disclose the invention recited in the independent claims 1, 14, 38, 39, 40 and 41. Furthermore, the remaining claims 2-13, and 15-17 depend from independent claims 1 and 14, respectively, which are distinguishable over the cited references.

Furthermore, as previously mentioned in the Amendment filed on April 20, 2005, the originally filed specification at paragraph [0028] discloses that the inventors were able to achieve the unexpected results of making fungal growth inhibiting paper facing by using substantially lower concentration of antifungal agent than the level recommended by the fungicide manufacturer. For example, as stated in paragraph [0028], the label recommended dosage for RX-31 (new RX3100) fungicide of Hercules Inc., is 5.0 to 20.0 pounds per ton of dry fiber produced (i.e. the paper), which is about 2500-10,000ppm of the paper in weight. The product label for RX-31 was submitted by the Applicant in an Information Disclosure Statement filed on April 16, 2004.

In view of the above, reconsideration of the application and allowance are respectfully requested.

Respectfully submitted,

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